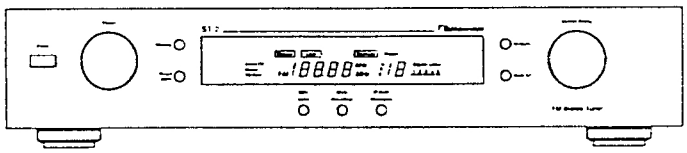
Nakamichi

Service Manual

ST-2

FM Stereo Tuner



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1. GENERAL

Reference Service Manual
The base Model of ST-2 is Tuner 2. In this Service Manual, identical sections/items are omitted. So, please refer to the Service Manual of Tuner 2 (0Q06155A).

1.1. Product Code
C108

1.2. Destinations
EP, UK, AUS, SAU, OTR, JPN

Abbreviation

EP	— Europe	SAU	— Saudi Arabia
UK	— United Kingdom	OTR	— Other
AUS	— Australia	JPN	— Japan

1.3. Cautions/Warnings
(1) Product Safety Notice
Parts marked with the symbol ⚠ in the schematic diagram have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer. It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

(2) Leakage Current Check/Resistance Check
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.
WARNING — DO NOT return the unit to the customer until the problem is located and corrected.

(3) Lithium Battery Caution
Use ONLY replacement parts recommended by the manufacturer. Replacement must be done only by qualified service personnel because of risk for explosion.

VARNING
Litiumbatteri. Explosionsfara vid felaktig hantering. Byte får endast ske av sakkunnig personal enligt servicedokumentationens anvisningar.

ADVARSEL!
Lithiumbatterier. Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig og som beskrevet i servicemanualen.
batterierne kun må udskiftes med batterier af samme fabrikat og type.

1.4. Voltage Selector
Voltage Selector is installed on the Rear Panel of the ST-2 (SAU and OTR). The voltage selector can select either 110V–120V or 220V–240V at customer's disposal.

1.5. Package Ass'y

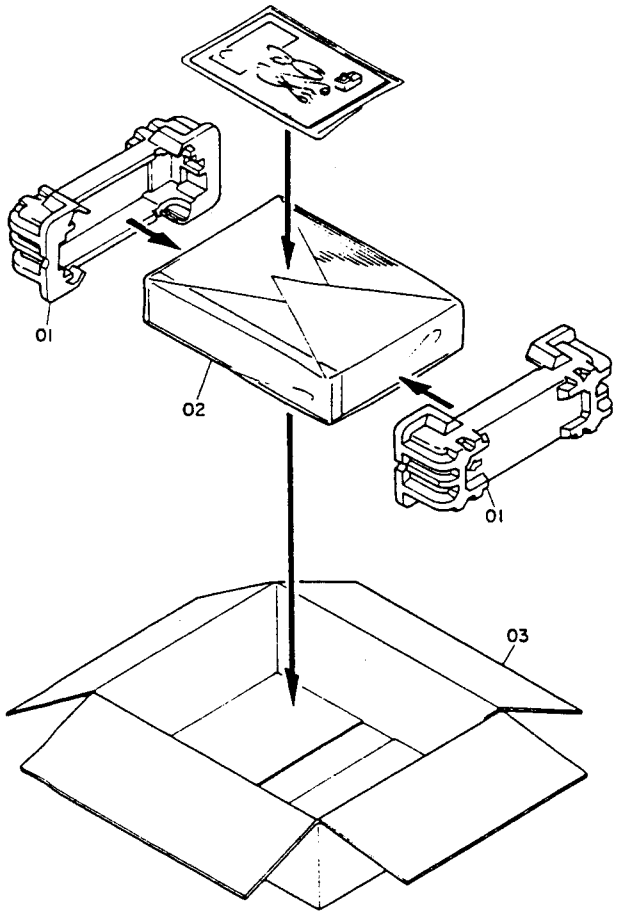


Fig. 1.1

Schematic Ref. No.	Part No.	Description	Q'ty
	—	**Package Ass'y**	
01	0F04707B	Packing	2
02	0F04458A	Soft Sheet	1
03	0F04753A	Carton Box	1

1.6. Accessory Ass'y

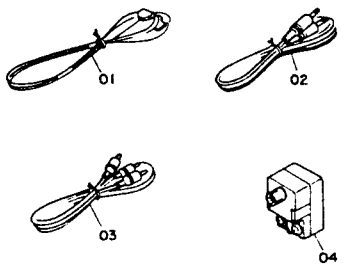


Fig. 1.2

Schematic Ref. No.	Part No.	Description	Q'ty
	DA04738A	**Accessory Ass'y (EP)**	1
	DA04735A	**Accessory Ass'y (UK)**	1
	DA04740A	**Accessory Ass'y (AUS, OTR)**	1
	DA04739A	**Accessory Ass'y (SAU)**	1
	DA04736A	**Accessory Ass'y (JPN)**	1
01	0B90081A	Feeder Antenna	1
02	0D06136A	Mini Plug Cord	1
03	DA04521A	Pin Plug Cord	1
04	0B90208A	Antenna Adapter EP FA-322 (EP, UK)	1
	0B90194A	Antenna Adapter F YAE21-0120 (AUS, SAU, OTR, JPN)	1
—	0D06461A	Owner's Manual (English)	1
—	0D06464A	Owner's Manual (French)	1
—	0D06463A	Owner's Manual (German)	1
—	0D06462A	Owner's Manual (Japanese)	1

2. MECHANISM ASS'Y AND PARTS LIST

2.1. Synthesis

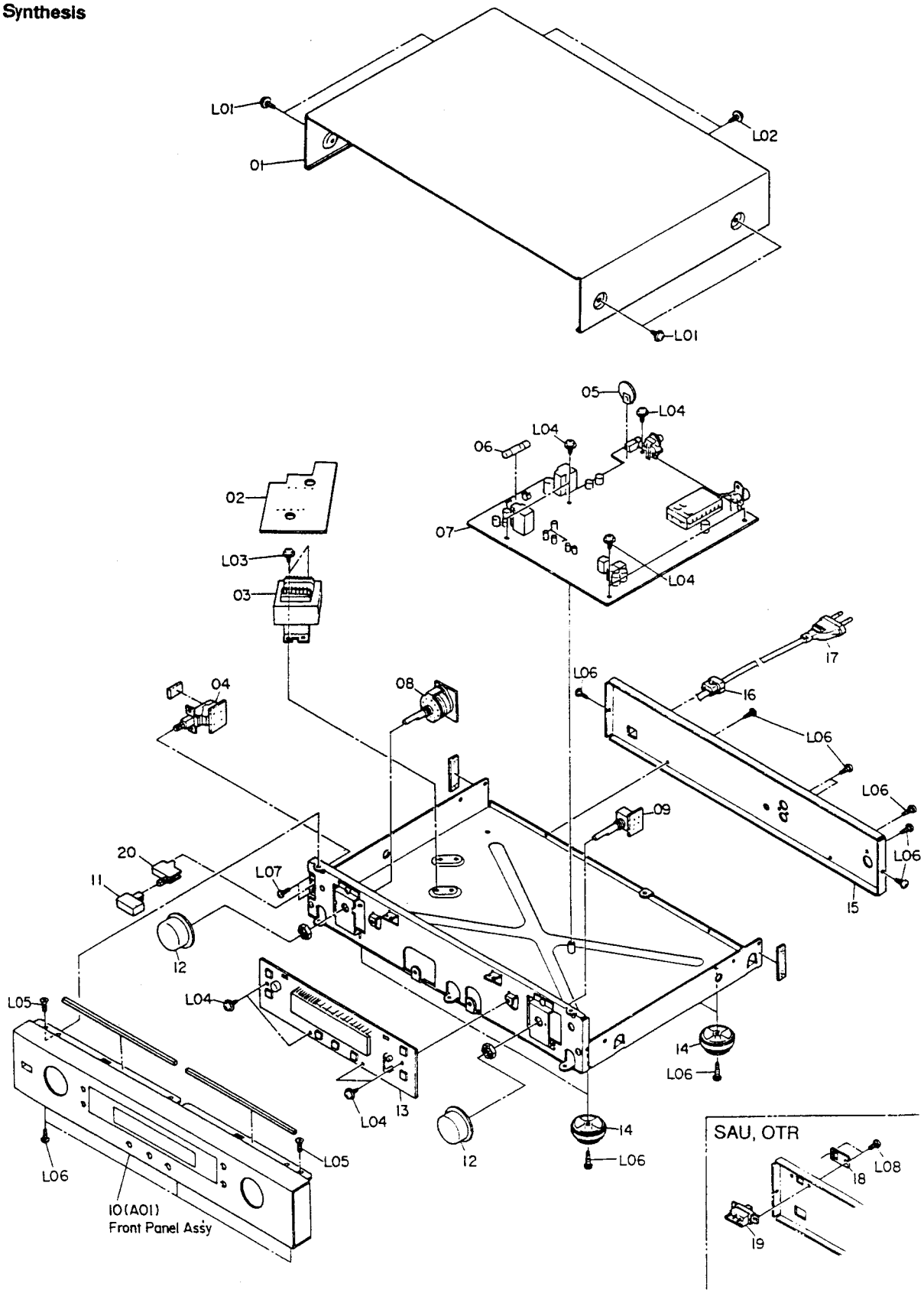


Fig. 2.1

2.2. Front Panel Ass'y (A01)

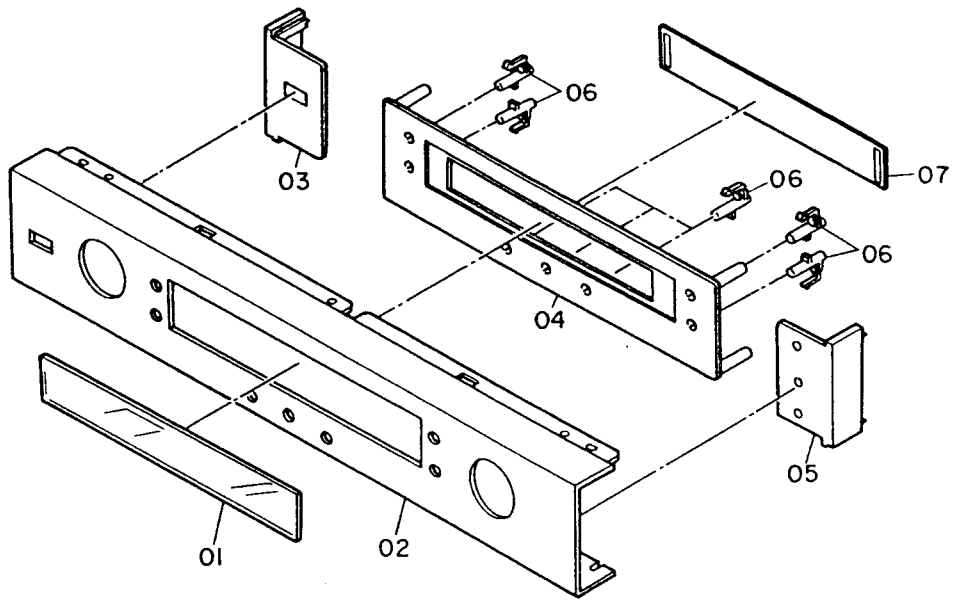


Fig. 2.2

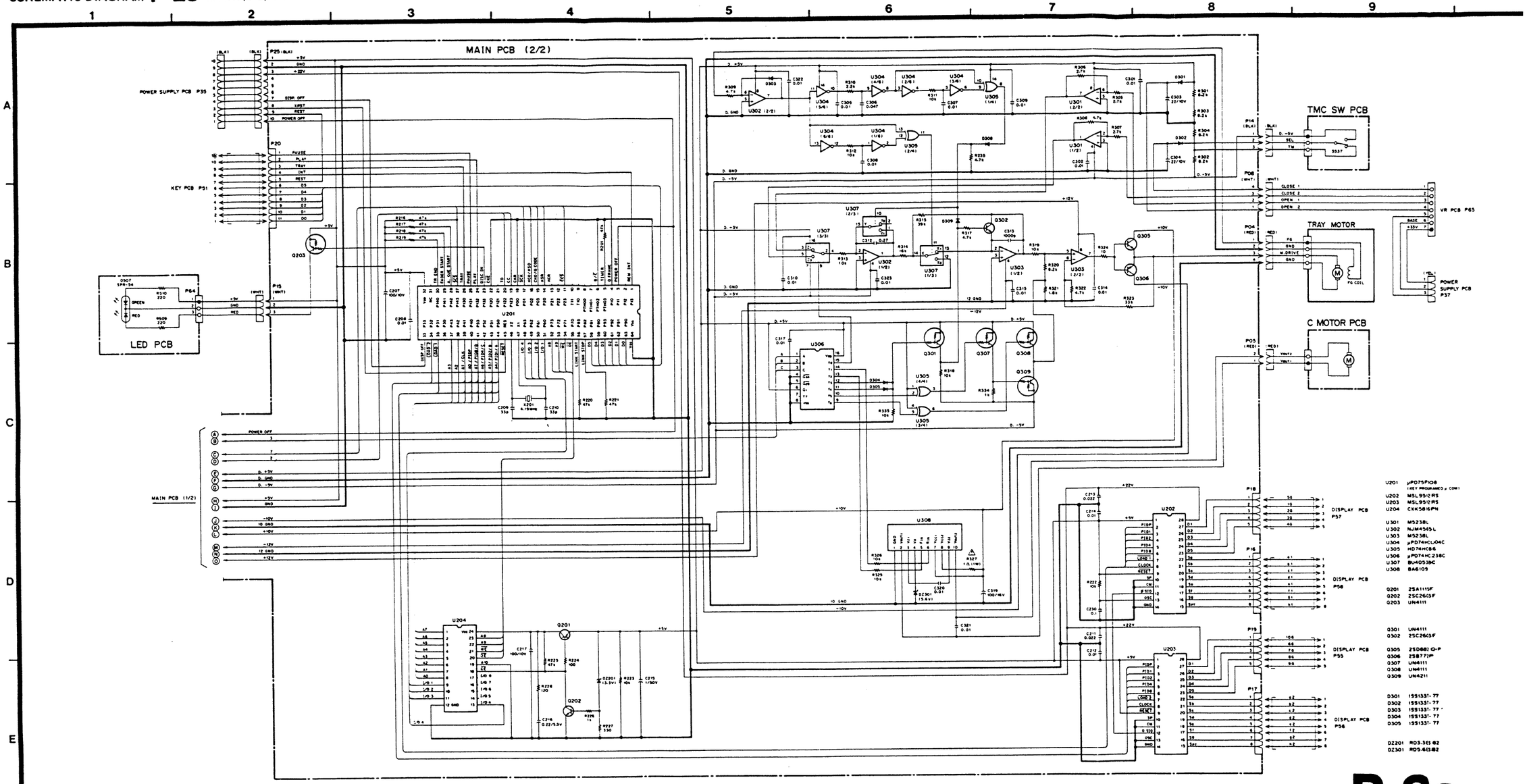
2.1. Synthesis

Schematic Ref. No.	Part No.	Description	Q'ty
	—	**Synthesis**	
01	0H06168A	Top Cover	1
02	BA08497A	Transformer P.C.B. Ass'y (EP, UK, AUS)	1
	BA08412A	Transformer P.C.B. Ass'y (SAU, OTR)	1
	BA08576A	Transformer P.C.B. Ass'y (JPN)	1
03	0B50214A	Power Transformer 230V (EP, UK, AUS)	1
	0B50217A	Power Transformer 120-230V (SAU, OTR)	1
	0B50215A	Power Transformer 100V (JPN)	1
04	BA08413A	Power Switch P.C.B. Ass'y	1
05	0B90200B	Lithium Battery [B601]	1
06	0B08344A	Fuse T200mA 250V [F401] (EP, UK, AUS)	1
	0B90599A	Fuse T250mA 250V [F401] (SAU, OTR, JPN)	1
07	BA08420A	Main P.C.B. Ass'y (EP, UK)	1
	BA08714A	Main P.C.B. Ass'y (AUS, SAU)	1
	BA08422A	Main P.C.B. Ass'y (OTR)	1
	BA08421A	Main P.C.B. Ass'y (JPN)	1
08	BA08414A	Rotary Switch P.C.B. Ass'y	1
09	BA08415A	Pulse Switch P.C.B. Ass'y	1
10	HA06672A	Front Panel Ass'y	1
11	0H06418A	Power Knob	1
12	HA06673A	Tuning Knob Ass'y	2
13	BA08416A	Display P.C.B. Ass'y (EP, UK, AUS, SAU)	1
	BA08419A	Display P.C.B. Ass'y (OTR)	1
	BA08417A	Display P.C.B. Ass'y (JPN)	1
14	0H06477A	Leg	4
15	0H06653A	Rear Panel (EP, UK, AUS, JPN)	1
	0H06655A	Rear Panel (SAU)	1
	0H06654A	Rear Panel (OTR)	1
16	0B90280A	Cord Bushing (EP, UK, AUS, SAU)	1
	0B90283A	Cord Bushing (OTR, JPN)	1
17	0B08093U	AC Power Cord (EP)	1
	0B08348A	AC Power Cord (UK)	1
	0B05241A	Power Cord (AUS)	1
	0B80336A	AC Power Cord KP-235 (SAU, OTR, JPN)	1
18	0M05611A	Voltage Lock Plate (SAU)	1
	0M05858A	Voltage Lock Plate (OTR)	1
19	0B07092U	Voltage Selector Switch (SAU, OTR)	1
20	0J07146A	Power Joint	1
L01	0E03032A	BT4x8 + Washer Faced (Black Chromate)	
L02	0E03632A	BT3x8 + Binding With Washer (Black Chromate)	
L03	0E03432A	BT3x6 + Tapping (Black Chromate)	
L04	0E03157A	BT3x8 + Binding With Washer	
L05	0E03054A	BT3x8 + Countersunk	
L06	0E00921A	BT3x8 + Binding (Black Chromate)	
L07	0E00612A	M3x6 + Pan (2A)	
L08	0E00985A	M3x6 + Binding (SAU, OTR)	

2.2. Front Panel Ass'y (A01)

Schematic Ref. No.	Part No.	Description	Q'ty
A01	**HA06672A**	**Front Panel Ass'y**	**1**
01	HA06674A	Display Window Ass'y	1
02	0H06658A	Front Panel	1
03	0H06659A	Side Escutcheon L	1
04	0H06662A	Center Escutcheon	1
05	0H06660A	Side Escutcheon R	1
06	0H06447B	Push Knob	7
07	JA04804A	FL Filter Ass'y	1

SCHEMATIC DIAGRAM **P-2S** MAIN(2/2) PCB



U201 μPD75P108 (KEY PROGRAMED y. COM1)
U202 MSL9512RS
U203 MSL9512RS
U204 CXK5816PN

U301 M5238L
U302 NJM4565L
U303 M5238L
U304 μPD74HCU04C
U305 MD74HC86
U306 μPD74HC238C
U307 BM4053BC
U308 BA6109

Q201 2SA1115F
Q202 2SC2603F
Q203 UN4111

D301 UN4111
D302 2SC2603F
D305 2SD882 O-P
D306 2SB772P
D307 UN4111
D308 UN4111
D309 UN4211

D301 1SS133T-77
D302 1SS133T-77
D303 1SS133T-77
D304 1SS133T-77
D305 1SS133T-77

DZ201 RD3.3ES-B2
DZ301 RD5.6ES-B2

P-2S CD DR

SCHEMATIC DIAGRAM **P-2S** POWER SUPPLY, DISPLAY AND KEY PCB

1 2 3 4 5 6 7 8 9 10

A B C D E

U.S.A. CANADA JAPAN — POWER SW PCB — FILTER PCB

GENERAL EXPORT — POWER SW PCB — FILTER PCB

EUROPE — POWER SW PCB — FILTER PCB

POWER SUPPLY PCB

DISPLAY PCB

KEY PCB

REM SW PCB

VR PCB

PTR PCB

SENS PCB

INTER PCB

MAIN PCB P08

MAIN PCB P23

MAIN PCB P24

MAIN PCB P25

MAIN PCB P27

MAIN PCB P20

MAIN PCB P19

MAIN PCB P17

MAIN PCB P16

MAIN PCB P18

U504 FIP10YMB
U505 SBX1483-52
U506 M54564P
U507 M54564P
U508 M54564P
U509 M54564P

U501 μPD7566C5-085
U502～U504 UN4111 (TA)
S501～S503 SKHHPJ
S504, S505 B3F-1150

D502～D504 1SS133T-77
D505 SLM38 DC3F
D506 SLM38 MC3F
D508 SLM38 DC3F

POWER SUPPLY PCB

U101	M5F7805L	D101～D104	FE1D-G23
U102	M5F7805L	D105, D106	S5688G
U103	M5F7905L	D107～D111	1SS133T-77
U104	M5F7812L	D112～D115	S3LA20P20 200V
U105	M5F7912L	D116, D117	S5688G
U106	DTC143ES		
U107	μPD74HC14C	D308～D311	1SS133T-77
U108	μPD74HC74C		
U109	μPD74HC393C	DZ101	RD24ESB2
U110	μPD74HC08C	DZ102	RD33ESB2
U111	μPD74HCU04C	DZ103	RD6.8ESB2
U112	DTC114YS		
Q101	2SD313E		
Q102	2SD313E		
Q104	2SC2603F		
Q311	2SC2603F		

NOTES

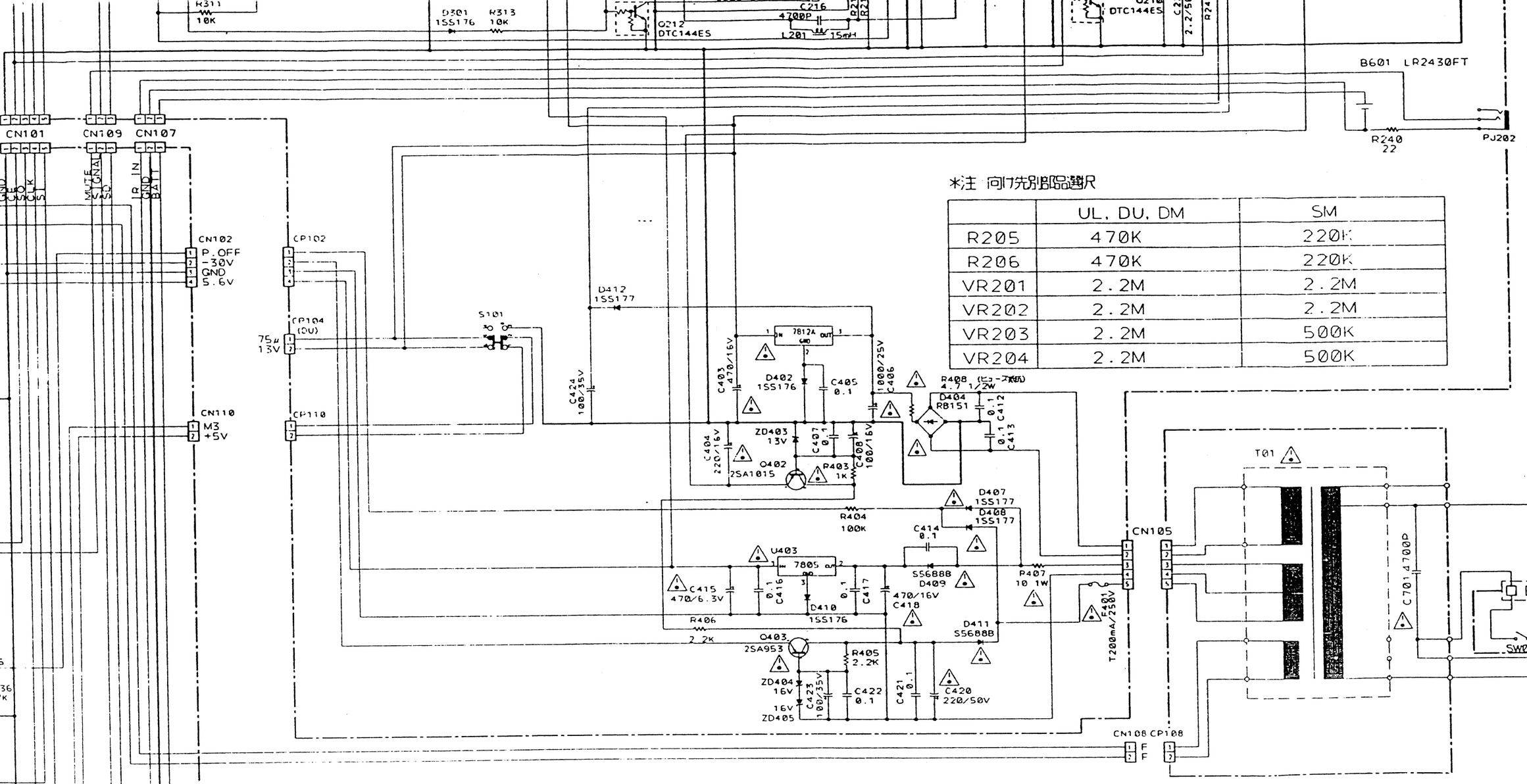
1. Resistor values are in ohms (k=kilo-ohms, M=megohms).
2. Capacitor values are in microfarads (p=picofarads).
3. Parts marked with △ this sign are safety critical components. They must always be replaced with identical components-refer to the appropriate parts list and ensure exact replacement.

注意

1. 抵抗の単位はΩ(k=kΩ, M=MΩ)です.
2. コンデンサの単位はμF(p=pF)です.
3. △マークのある部品は安全重要部品です. 交換するときは必ずティアック指定の部品を使用してください.

INSTRUCTIONS FOR SERVICE PERSONNEL
BEFORE RETURNING APPLIANCE TO THE CUSTOMER, MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT.

P-2S CD DRIVE UNIT



*注 向け先別部品選択

	UL, DU, DM	SM
R205	470K	220K
R206	470K	220K
VR201	2.2M	2.2M
VR202	2.2M	2.2M
VR203	2.2M	500K
VR204	2.2M	500K

* WARNING:

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Use ONLY replacement parts recommended by the manufacturer.

* CAUTION:

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* WARNING:

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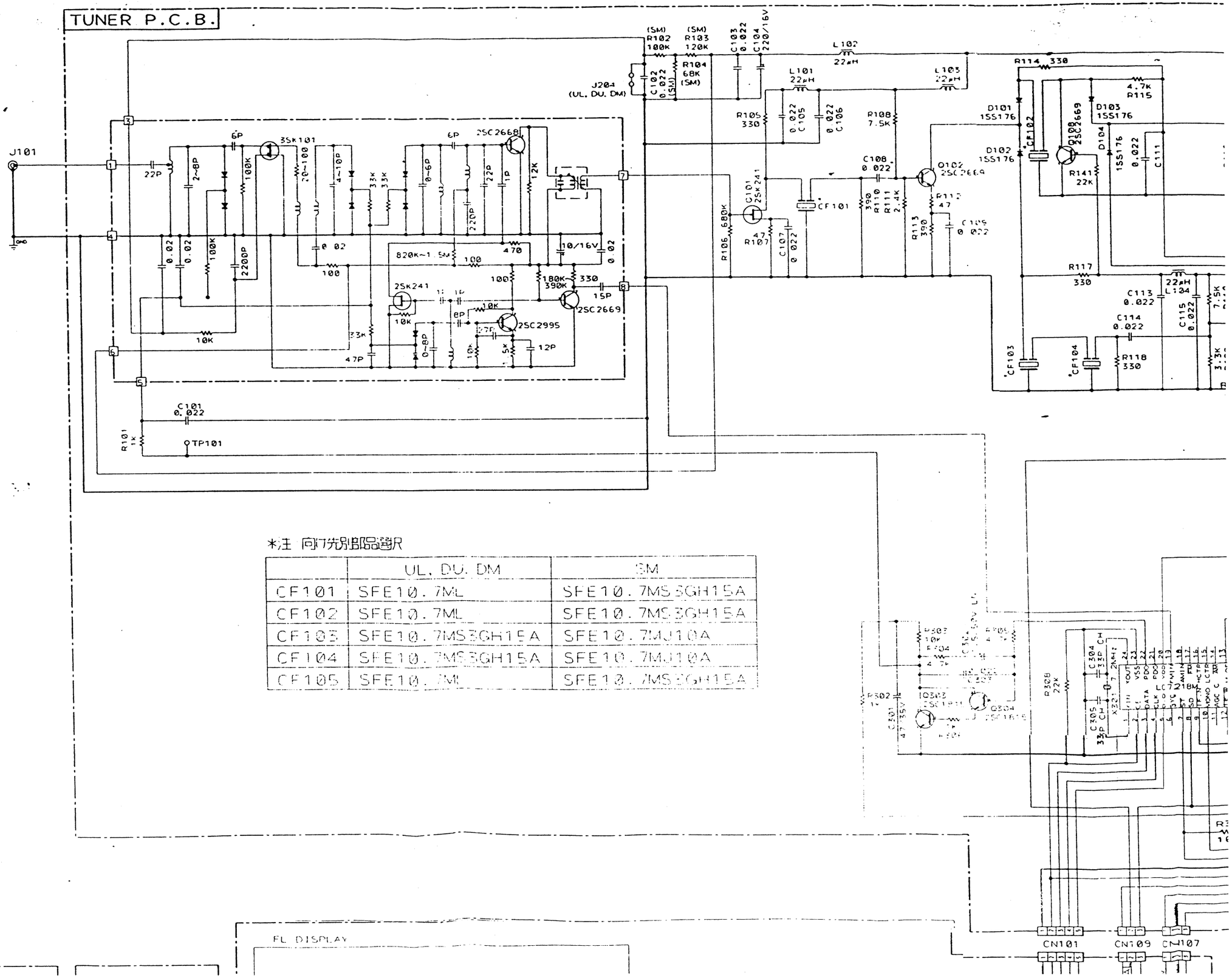
TUNER P.C.B.



*注 向け先別部品選択

	UL, DU, DM	EM
CF101	SFE10.7ML	SFE10.7MS3GH15A
CF102	SFE10.7ML	SFE10.7MS3GH15A
CF103	SFE10.7MS3GH15A	SFE10.7MJ10A
CF104	SFE10.7MS3GH15A	SFE10.7MJ10A
CF105	SFE10.7ML	SFE10.7MS3GH15A

FL DISPLAY

FM 102.35MHz

FL601

SW602

SW601

SRRM

SRRM

CN106

CN105

CN101

CN109

CN107

GND
CLOCK
DATA

MUTE
SIGNAL
SD

IR IN
GND
BATT

D602
1SS176

D603
1SS176

D601
1SS176

D605
1SS176

D606
1SS176

D608
1SS176

ZD601
9.1V

ZD602
7.5V

R601
22K

R602
22K

R606
10K

R607
68K

R608
330

R611
47K

RA602
10K

RA603
100K

RA604
100K

RA605
100K

RA601
10K

R641
100K

R655
220

R656
220

R657
10K

R634
6.8K

R635
5.6K

R636
47K

R633
100K

R628
22K

R629
22K

R630
22K

R631
22K

R624
47K

R622
1K

R623
10K

C601
470/6.3V

C602
0.1

C603
10/16V

C604
10/16V

C605
33P CH

C606
33P CH

C607
0.1

C608
2.2/50V

C609
4.7/25V

C610
0.1

C611
33/35V

C612
220/6.3V

C615
0.1

C616
0.1

C617
0.1

Q601
DTC144ES

Q602
2SC1815

Q607
DTC144ES

Q608
DTC144ES

Q604
DTC144TF

Q605
2SC1815

Q606
2SC1815

U601
UPD75216A CW

4.19MHz
X601

SW603
SW604
SW605

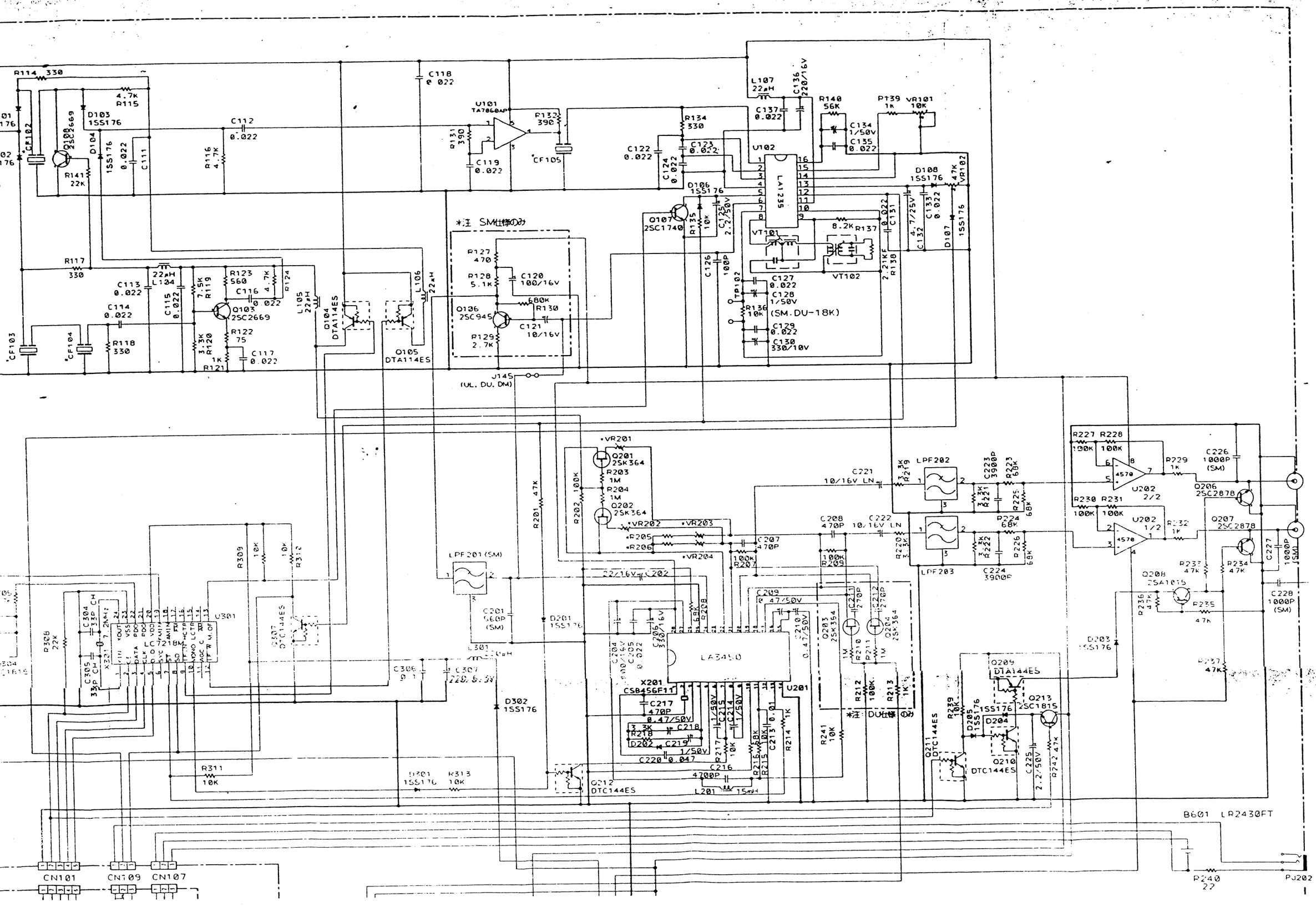
NARROW
MUTE. OFF
MONO

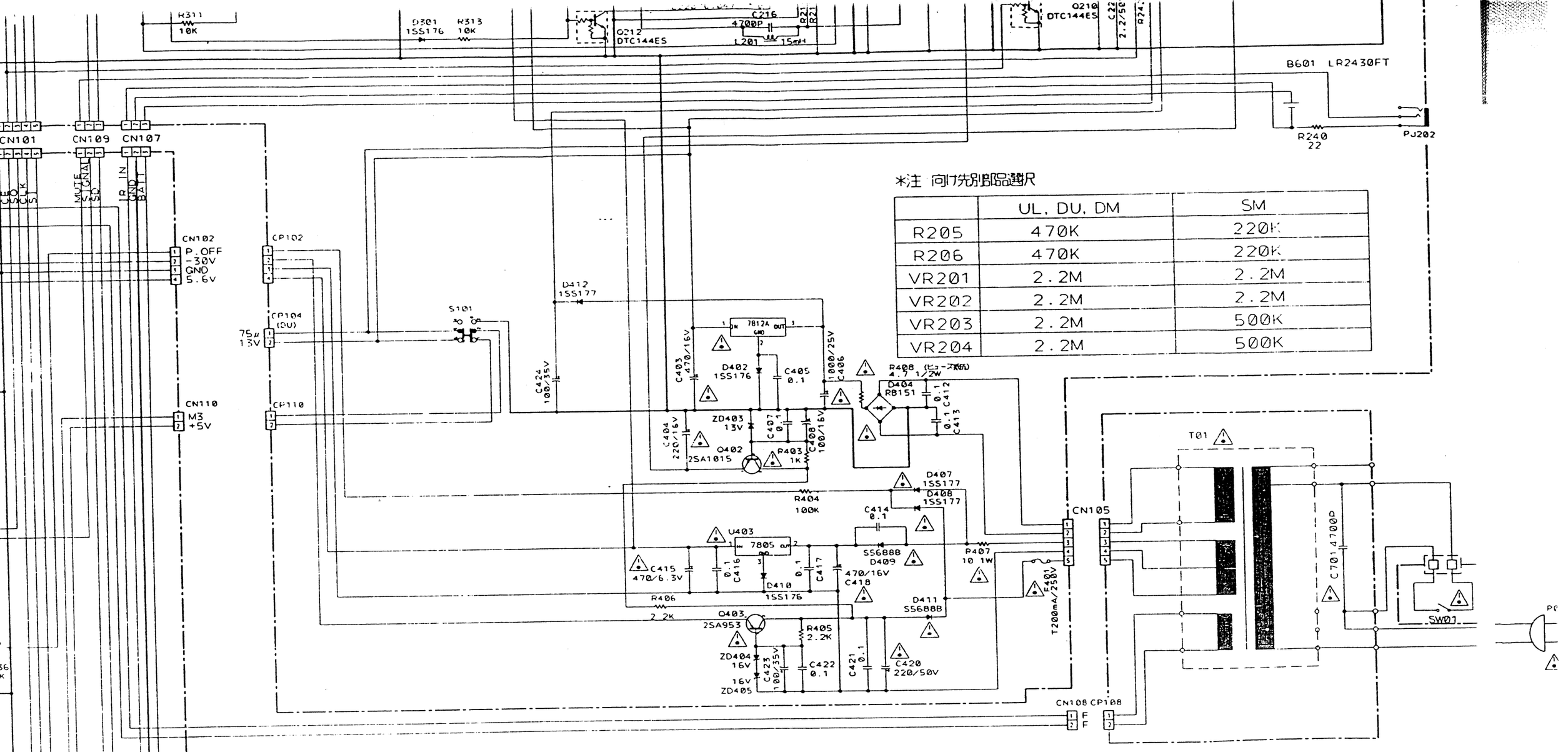
SIGNAL
U602

LA1413N

SW606
SW607
SW608
SW609

Memory
P.Set AA/B/C
Seek UP
Seek Down


R114 330
4.7K R115
D103 1SS176
CF102
Q108 2SC2669
D104 1SS176
0.022 C111
R141 22K
C112 0.022
R116 4.7K
C118 0.022
U101 TA7060AP
R131 390
R132 390
C119 0.022
CF105
R134 330
C122 0.022
C123 0.022
C124 0.022
L107 22μH
C136 220/16V
C137 0.022
R140 56K
PT39 1K
VR101 10K
C134 1/50V
C135 0.022
U102
LA1235
D108 1SS176
47K VR102
D106 1SS176
Q107 2SC1740
R135 10K
C125 2.2/50V
C126 100P
8.2K R137
VT101
VT102
C131 0.022
4.7/25V C132
C133 0.022
D107 1SS176
TP102
C127 0.022
C128 1/50V
R136 10K (SM.DU-18K)
C129 0.022
C130 330/10V
R117 330
C113 0.022
22μH L104
C115 0.022
R123 560
C116 0.022
4.7K R124
7.5K R119
C114 0.022
Q103 2SC2669
R122 75
C117 0.022
3.3K R120
1K R121
R118 330
CF103
CF104
L105 22μH
Q104 DTA114ES
L106 22μH
Q105 DTA114ES
*注 SM仕様のみ
R127 470
R128 5.1K
C120 100/16V
680K R130
Q136 2SC945
C121 10/16V
R129 2.7K
J145 (UL. DU. DM)
C118 0.022
R201 47K
R202 100K
•VR201
Q201 2SK364
R203 1M
R204 1M
Q202 2SK364
•VR202
•VR203
•R205
•R206
•VR204
C207 470P
100K R207
C208 470P
C222 10/16V LN
R208 100K
R209 100K
C209 47/50V
C210 0.47/50V
C211 270P
C212 270P
Q203 2SK364
Q204 2SK364
R210 1M
R211 1M
R212 100K
R213 1K
DUMMY
R241 10K
C221 10/16V LN
R219 3.3K
LPF202
C223 3900P
R223 68K
R225 68K
R224 68K
R220 3.3K
R222 3.3K
LPF203
C224 3900P
R227 R228 100K 100K
R229 1K
C226 1000P (SM)
U202 2/2
Q206 2SC2878
R230 R231 100K 100K
U202 1/2
R232 1K
Q207 2SC2878
R233 47K
R234 47K
C227 1000P (SM)
Q208 2SA1015
R236 47K
R235 47K
C228 1000P (SM)
D203 1SS176
R237 47K
LPF201 (SM)
C201 560P (SM)
C202 22/16V
D201 1SS176
L301 220μH
C306 0.1
C307 220/6.3V
D302 1SS176
R309 10K
R310 10K
R308 22K
C304 33P CH
C305 33P CH
X231 7.2MHz
U301
LA3450
X201 CSB456F11
C217 470P
0.47/50V
C218
R218 3.3K
D202
C219 1/50V
C220 0.047
C215 1/50V
C214 1/50V
C216 4700P
R217 10K
R216 68K
R215 10K
C213 0.01
R214 1K
L201 15μH
R311 10K
D201 1SS176
R313 10K
Q212 DTC144ES
Q209 DTA144ES
Q213 2SC1815
R239 10K
D205 1SS176
D204
Q211 DTC144ES
Q210 DTC144ES
C225 2.2/50V
R242 47K
B601 LR2430FT
R240 22
PJ202
CN101
CN109
CN107



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VR204	2.2M	500K

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REVISIONS DATE: '92/12/17 SHEET A1